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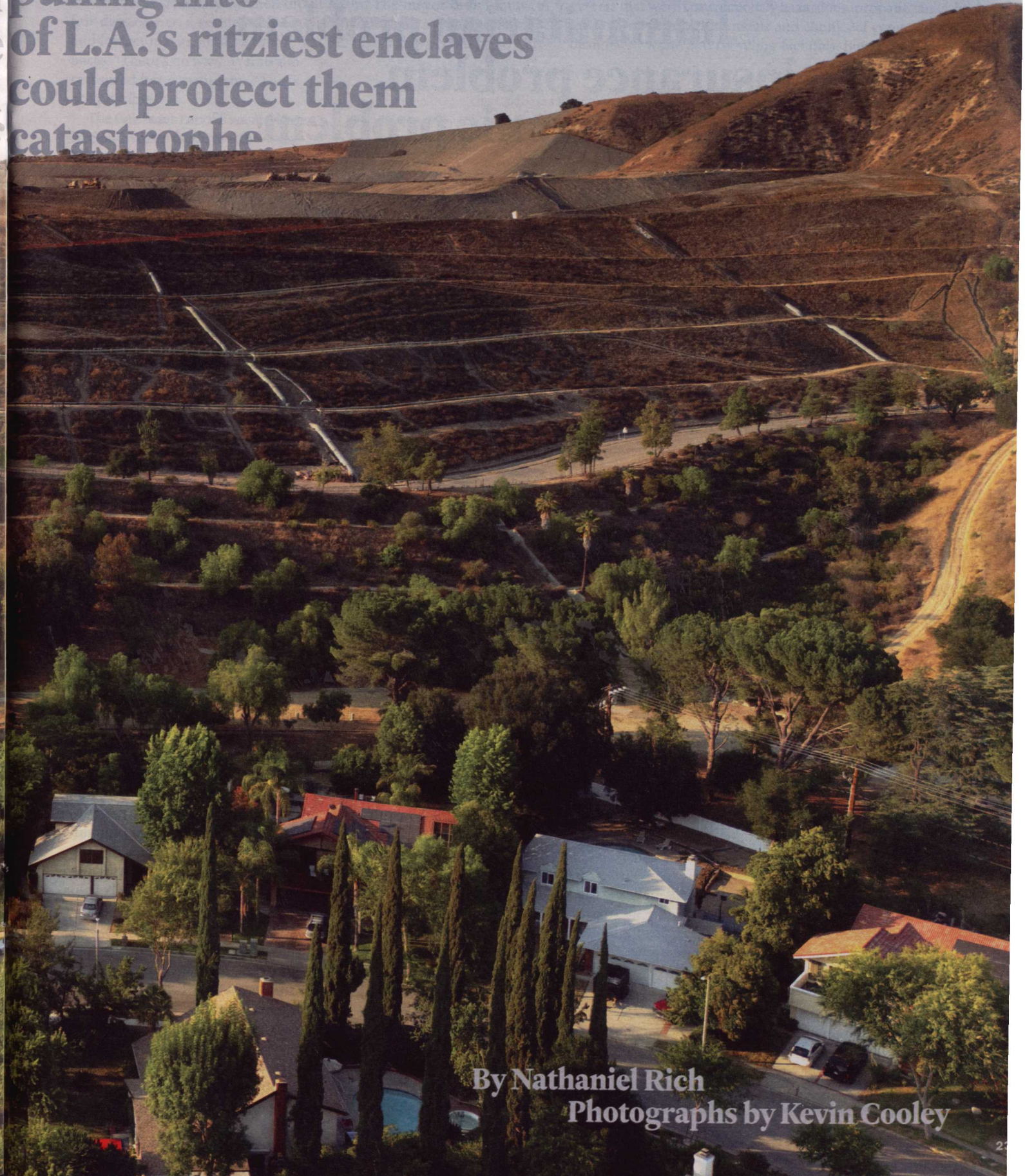
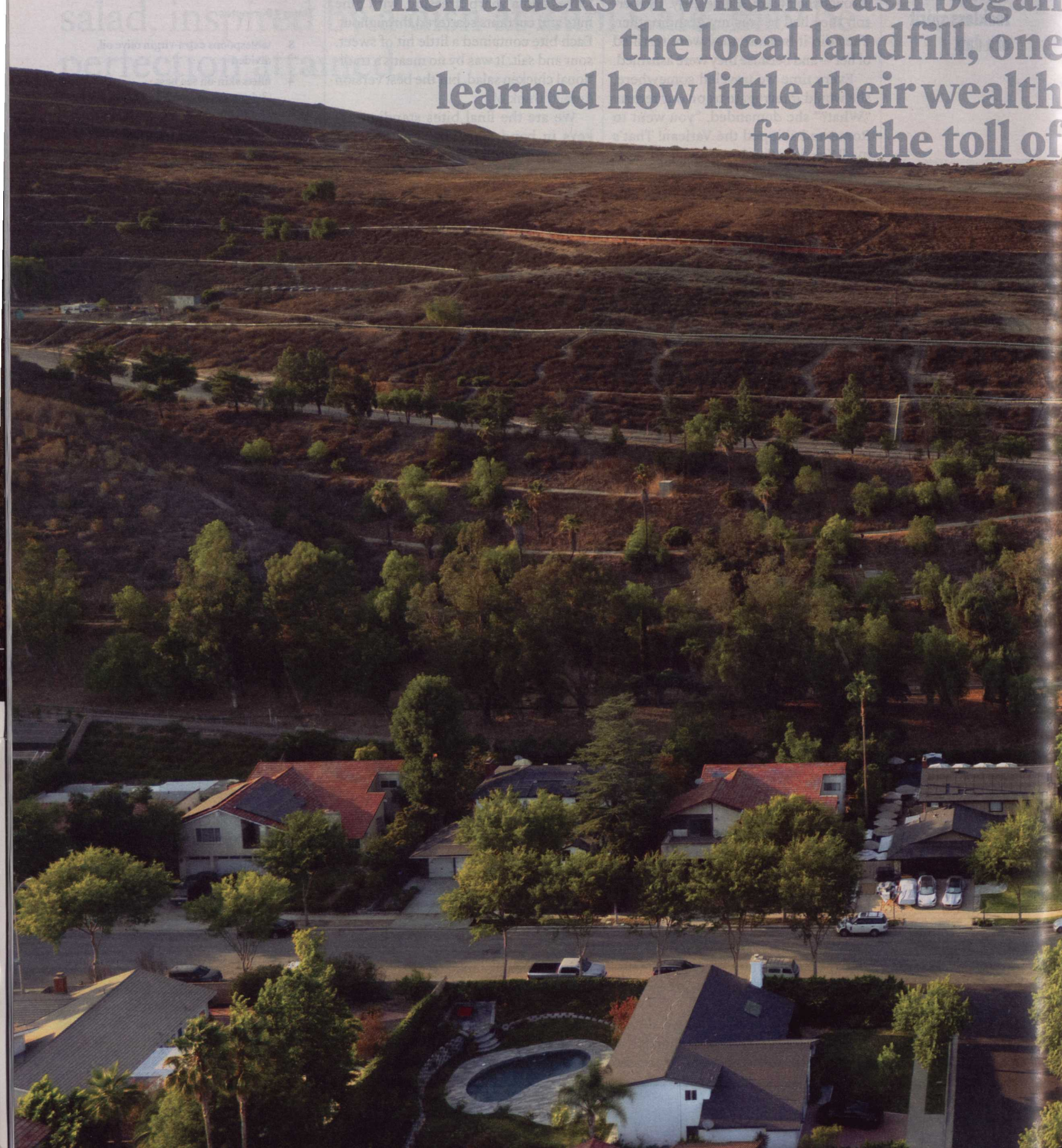
THERE GOES THE NEIGHBORHOOD

AUG 31 2025

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When wildfire ash was trucked to the local landfill, one of L.A.'s ritziest enclaves learned a bitter lesson in environmental justice.
By Nathaniel Rich

There Goes the Neighborhood
When trucks of wildfire ash began pulling into the local landfill, one of L.A.'s ritziest enclaves learned how little their wealth could protect them from the toll of catastrophe



By Nathaniel Rich
Photographs by Kevin Cooley

be trucked to landfills. Sawser acknowledged that his workers in the Palisades wore respirator masks and hazmat suits.

"Is there something left in that ash?" Sawser mused. "Nothing on that list that we know of. But it's as hazardous as any ash product can be." He emphasized, as many officials would over the coming months, that he was "not a scientist."

"Can you be 100 percent certain that no waste that is hazardous will end up in the landfill?" Weintraub asked.

"Ma'am," Sawser said, "I taught probability and statistics at West Point, so I'm going to be hard pressed to be 100 percent certain of anything. So I'm not trying to equivocate. No, I will not offer you 100 percent."

The city manager pointed out that 200,000 tons of debris from the Woolsey fire was dumped in the Calabasas Landfill in 2018, after a similar emergency waiver was granted.

This did not satisfy the Council members. Los Angeles County had cleared Calabasas to accept up to 5,000 tons of ash from the Palisades fire every day for at least six months. The Woolsey fire had burned in mostly uninhabited areas, not dense urban neighborhoods, destroying less than one-tenth as many structures as the 2025 fires. And some samples of Woolsey fire ash were found to contain radioactive waste.

"I moved to California four years ago," said Natasha Downing, an actress and mother of two young children, "and Calabasas has exceeded my wildest dreams." But now she was worried about cancer clusters, chronic respiratory illnesses and brain damage from the inhalation of lead and arsenic — all side effects that studies had found after exposure to wildfire smoke and ash. "I love my home. I worked my whole life to buy my home, and I hoped to live here forever," she continued. "But if this

waste comes to the landfill, I have to move." She added, "My children's lives are literally at risk."

Kelly Martino, a mother of two, is the regional director of property management for a company that controls 10,000 units in Los Angeles built before 1977, when asbestos was still commonly used in residential construction. Martino was convinced, no matter what spot testing had been done on site, that the Palisades ash was laced with asbestos. At the Council meeting, she announced plans to hold a protest at the landfill. "Moms could rule the world much better than the people who rule it now," she said. "We intend to stop this."

Geller compared the clearing of the Palisades to the cleanup of the World Trade Center site after the Sept. 11 attacks. More people, she pointed out, have died from diseases caused by exposure to hazardous waste at ground zero than from the terrorist attacks themselves. The federal World Trade Center Health Program monitors hundreds of thousands of people who were in Lower Manhattan for 52 health conditions, including a dozen kinds of airway and digestive disorders and more than 15 types of cancer.

"I don't think the Calabasas community wants a victim fund in 10 or 15 years," Geller said. As she spoke, her voice rose, her tone entering the Cassandra register. The mayor, Peter Kraut, interrupted, trying to tell her that her time was up. She ignored him. Calabasas, she said, "is one of the only landfills in California that's near a residential area, a residential area with parks that my child, my 5-year-old *with one kidney*, plays at."

Kraut pounded the gavel, calling for order.

"I'd like to devote my three minutes to her," someone in the gallery called out, to swelling cheers.

"We are going to hire an attorney!" Geller shouted, her back turned from Kraut, the City Council and Sawser. She addressed her fellow citizens: "We are going to get this stopped! Calabasas is not going to sit back and wait to be another 9/11!"

"What good is privilege if you're still being poisoned?" Ariella Schrader said.



The environmental-justice movement emerged from landfills. In 1978, the governor of North Carolina announced plans to dump tens of thousands of tons of soil contaminated with polychlorinated biphenyls (PCBs) — compounds also prevalent in wildfire ash — in a majority-Black county, one of the state's poorest. For the next four years, there were protests, lawsuits and more than 500 arrests. In the end, the state dumped a smaller share of the waste, 7,000 tons, but a movement was born.

Its intellectual leader was Robert Bullard, a sociology professor who, as he later put it, got "dragged into this" when his wife, a lawyer, asked for his help with a lawsuit fighting a proposed landfill in Houston. Bullard noticed that all the publicly owned landfills in the area were in Black neighborhoods. He also observed, more generally, that the national environmental movement that emerged during the 1970s was supported by middle- and upper-middle-class white people with an above-average education, even

though "toxic dumping and the location of locally unwanted land uses" disproportionately burdened Black and poor communities.

"How are the benefits and burdens of environmental reform distributed?" he asked in his foundational 1990 book, "Dumping in Dixie." "Who gets what, where, and why?" Historically, white people got their way, he wrote, while Black people and the poor got dumped on. As white environmentalists made NIMBY ("not in my backyard") cases against hazardous waste, government and industry responded with what Bullard called the "PIBBY" principle: "place in Blacks' backyard."

When viewed in isolation, the statements made by Calabasas residents during the last few months are indistinguishable from those heard in recent years in places like Flint, Mich.; Jackson, Miss.; and Mossville, in the heart of Louisiana's Cancer Alley. Edward Albrecht, a Calabasas City Council member, expressed his disbelief that the city was "powerless to have an influence on what's going to happen." Pegah Pourrahimi, whose children attend the same elementary school that she did, about a mile from the landfill, said, "It just doesn't make any sense in the long term, but I don't think they care." Ariella Schrader, a television producer and mother of two, said: "I truly feel that they are gambling with our lives. I mean, what are we waiting for? Children to die?"

By most other metrics, however, Calabasas is the anti-Flint, the anti-Jackson, the anti-Mossville. It is one of the richest cities in the United States. Only one in 40 residents is Black. Its schools are among the best in the state. The life expectancy far exceeds the national average, as do the rates of advanced degrees, electric-vehicle chargers and equestrian barns.

Central to Bullard's conception of environmental justice is the principle of "personal efficacy": the measure, in part, of a community's faith in its political representation. If residents complain, will anyone listen? In most cases of environmental injustice, a victimized community believes that nobody will.

It is hard to imagine a community with a healthier sense of personal efficacy than Calabasas. "Usually, communities like ours are not victimized by environmental injustice, because they have some level of power and influence," said James Bozajian, a Council member who has served the city in some capacity for more than three decades and publishes a regular column in the local paper about the region's history. "The city has fought many battles over the years, and we usually have been arrayed against some very powerful interests."

The battles that Calabasans have fought they have tended to win. They blocked a supermarket from razing a historic property and defeated the construction of a highway that would have run through downtown. In 2003, they successfully thwarted plans to build an entire city on nearly 3,000 acres just north of town; after an 11-year legal battle, Gov. Gray Davis interceded on Calabasas' behalf, using a discretionary fund to preserve the land as a state park.

One gets the impression, in Calabasas, that no resident is more than two degrees removed from any elected official in the nation. In the days after the landfill decision was announced, at least two "old friends" of Robert F. Kennedy Jr. called him to demand that he intervene. Kennedy is routinely referred to in conversation as "Bobby." The governor is "Gavin." After the Kardashians called Newsom, the governor's office arranged for them, and the film crew from their Hulu show, a private tour of the landfill.



Michelle Geller alerted the Calabasas Environmental Commission to the plans for the wildfire ash. She has since moved with her family to Ventura County.

When a community in the United States confronts a grave environmental threat, it asks itself: Who will be our Erin Brockovich? Calabasas had its answer: Erin Brockovich. Two days after the City Council meeting, Brockovich posted a video from the kitchen of her home in Agoura Hills, which borders Calabasas and the landfill, urging her followers to protest. Barefoot in an F.D.N.Y. bomber jacket, Brockovich stood between Kelly Martino and Natasha Downing, whose infant daughter slept on her chest in a baby carrier. "Never ever underestimate the power of a pissed off mom," Brockovich wrote in her accompanying newsletter. "When you mess with their kids' health and their community, they will organize, and they will fight for justice."

The money, power and flexible weekday schedules of the residents yielded instant successes. Local television news crews followed Courtney and Khloe Kardashian to local protests, where they spoke to reporters and waved placards ("Fill Our Hydrants, Not

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Our Dumps!"). A GoFundMe campaign raised \$76,482 to employ a major Los Angeles firm, Greenberg Glusker, for a residents' lawsuit against the county to block the delivery of ash. The city's operating budget was robust enough to fund its own lawsuit, and it filed for an immediate injunction and a temporary restraining order.

The gated community nearest to the landfill, Mont Calabasas, raised \$2,500 to install an air monitor. Kelly Martino and other residents of Saratoga Hills, the neighborhood that borders the landfill on its southern rim, raised \$9,000 toward installing an even more sophisticated air monitor in Grape Arbor Park, the picturesque neighborhood park that stands along the landfill's access road. Through various personal connections, teams of experts at U.C.L.A. and U.C.-Davis were enlisted to conduct air, soil and water studies.

Local residents, many of whom held advanced medical, legal and public-health degrees, conducted their own research. They learned about the relative dangers, and dispersibility, of fine and ultrafine particulate matter. They studied local wind patterns and learned that gusts carried airborne particles from the Calabasas Landfill straight downhill. They learned that runoff from the fires traveled as far as 100 miles offshore, worsening toxic algae blooms and leading to so many beached sea mammals that Los Angeles's Marine Mammal Care Center had to treat sea lions in its parking lot. The Calabasans also learned that exposure to wildfire ash increased the risks of asthma, sinus infections, eye irritations, kidney damage, emphysema, chronic obstructive pulmonary disease, lung cancer, brain cancer, Alzheimer's, strokes and heart attacks. They learned that the effects of ash exposure may be even worse in children.

As in any public-health crisis, residents did what they could manage to protect their families. In Calabasas, they could manage a lot. Monica Lieberman, a media director who moved to Calabasas with her husband and infant son in 2020, bought air filters and a water filter for her house and a portable air filter for her car. Pegah Pourrahimi moved a few of the industrial air filters she uses in her dental practice to her house. When the particulate levels spiked, she kept her windows shut and discouraged her children from playing outside. "My kids are my whole world and my life," she said. "This is something no parent should have to navigate." Pourrahimi, like the other residents, didn't know whether the filtered air in her home was considerably cleaner than the air outside, but she figured it couldn't be any worse.

The terror of these early weeks yielded another, unexpected transformation in Calabasas. For many in the community, particularly those who had arrived during the Covid years in search of better schools and fresh air, the landfill crisis

sparked a sense of civic solidarity. Natasha Downing had made just two friends since moving with her husband from New York City four years earlier. She had stopped auditioning to focus on raising her young children. But now she found herself at the center of a movement. She spent her days collecting samples of water and soil from the creek that ran behind the Albertson's grocery store, speaking with emotional force at city meetings, granting interviews and leading hundred-person protests in front of the landfill with a bullhorn.

"It was the first time in a very, very long time that I felt like I was actually doing something with my life that mattered," Downing said. "I thought we'd have this done in a couple weeks. And then I wanted to help other people who are being poisoned, and help them fight too."

The trucks were given clearance to begin dumping on Monday, Feb. 17, a month earlier than originally indicated. That morning, more than 100 residents, led by Kourtney Kardashian, the former Playboy Playmate Kendra Wilkinson and a bunch of children, formed a blockade in front of the landfill. At 8 a.m., the trucks began to arrive — 15-ton dump trucks subcontracted from all over the state. The police officers dispatched to the scene were helpful, even deferential. They allowed the protesters to stand their ground and promised to give warnings before making any arrests. The truckers idling behind the blockade, who were paid by the load, were not so charitable and addressed the sign-waving women with collective slurs.

"People don't care about a city like Calabasas," Ariella Schrader said. "When the Palisades homes burned down, it's like: 'They'll be fine. They have enough money to rebuild.' And with Calabasas, it's the same type of mentality. Whereas Cancer Alley, it's like: 'Oh, my God, these poor people! So heartbreaking!' What's the difference? We're all humans!"

The first blockade lasted all day; no truck entered the landfill. The blockade resumed Tuesday: a multigenerational Calabasas block party, accompanied by a decorous police escort, and a line of furious truck drivers, their beds brimming with tons of ash. The blockade continued Wednesday and Thursday. On Friday, lawyers for the City of Calabasas appeared in Los Angeles County Superior Court to present arguments for their restraining order. The county announced that no trucks would be sent to the landfill while the judge considered them. The threat appeared averted.

Three days later, however, the judge denied the request. Although the Calabasas Landfill was not permitted to accept hazardous waste, it was authorized to accept fire debris. (That authorization dated to a 2008 emergency proclamation by Gov. Arnold Schwarzenegger that allowed wildfires debris to be sent to lined Class III landfills, among them Calabasas.) The apparent contradiction at the heart of this order — that hazardous waste could not be dumped in residential

landfills, except after fires, in enormous quantities — did not trouble the court's conscience. The same day, the Los Angeles County Board of Supervisors voted unanimously to expand the area from which the Calabasas Landfill could accept fire ash. The trucks returned with alacrity, as if making up for lost time.

The protesters returned too, for a couple of days, but on Feb. 27, the police made an arrest. Officers did not handcuff one of the mothers with infants strapped to their chests, but they waited until a middle-aged man took over the bullhorn. "They were very kind people," the man admits today. (The vice president of a local business, he requested anonymity because of the criminal charge.) "They treated me fairly. I was OK with the whole situation."

The residents' appetite for confrontation, however, had soured. Fewer than 20 people showed up at the landfill protest the following day. Two days later, there were 10. Then nobody came to the landfill at all, except the trucks, which never seemed to stop.

This spring, it was not uncommon to see a truck pass by every 10 seconds on Calabasas' main streets. Residents noticed a difference in the air. "We feel it," said Michal Keswick, whose son was having coughing fits. "We know what's happening."

Many parents plunged into existential crises. "There's always a nagging butterfly in my stomach," Keswick said. "Am I doing the right thing for my kids, exposing them to harm every day? It puts you in this angry state. We're exposed to crap everywhere, but knowing that this landfill is in our backyard is really draining."

Exhaustion gave way to paralysis. "If I was smart, I'd move," Ariella Schrader said. But that wouldn't be easy. "We work in the entertainment industry," she said. "We have roots here. My husband and I have lived in L.A. our entire lives. What are we supposed to do?"

Seeking a productive channel for their anxiety, outraged residents spent their days as citizen sleuths. They stalked the truck routes, taking videos and forwarding them to government officials.

"I can't tell you how many times I've written to Newsom," said Melissa Olen, a real estate broker and mother of three who moved to Calabasas to live in a place that was far more environmentally conscious than her hometown. That hometown was Boston. "I love the plastic-bag ban," she said. "I love electric cars. I love the whole thing. I have higher expectations than this." Olen compiled dozens of clips of protective tarps flapping loosely in the wind, piles of ash spilled onto the road, trucks illegally parked, trucks failing to come to a full stop at a stop sign.

Tonia Arey, a local real estate agent, photographed cigarette butts left discarded on the road beside the parked trucks. It is illegal for dump trucks to park in Calabasas. It is illegal, in any public space in Calabasas, to light a cigarette.

'My kids are my whole world and my life. This is something no parent should have to navigate.'

It began to dawn on the residents of Calabasas that no matter how much money they raised or how many phone calls they made, nobody felt sorry for them. The local state senator, Ben Allen, sent beseeching letters to the governor's office without effect. The local county supervisor, Lindsey Horvath, stopped returning calls from constituents or City Council members.

"What does she care if it's being dumped here?" Tonia Arey said. "She lives in West Hollywood." ("Supervisor Horvath cares deeply for our Calabasas community," a spokeswoman wrote in an email. "The lawsuit that was filed made continued dialogue and partnership on the landfill challenging. Throughout the fires and now, in our active recovery, Supervisor Horvath has demonstrated an unrelenting commitment to supporting our residents, businesses, and first responders through one of the worst disasters in our County's history.") Arey has decided to run for Horvath's seat.

Many felt betrayed by Robert F. Kennedy Jr. — not so much politically as personally. "Calabasas in general has been a huge supporter of his," Ariella Schrader said. "He's Mr. Environmental Lawyer, right? I feel completely abandoned by him. I'm heartbroken."

Their social media campaigns engendered as much resentment as sympathy. "At first we felt empowered," Schrader said. "But then it was just like: 'What, should the ash go to a poorer city? Way to use your white, rich privilege.'"

Residents were sensitive to the criticism. "There's a stigma, living in Calabasas," Michal Keswick said. "We don't care about you because you're quote-unquote wealthy. I get it. But I just want to raise my kids in a safe, law-abiding place. I hope that for everybody, not just for us."

City officials, meanwhile, could not figure out who made the decision to send the ash to Calabasas. The county blamed the Army Corps; the Army Corps said it received a list of landfills from the county. The governor's office directed inquiries from The Times to CalRecycle's office of public affairs, which said in an email, "The United States Army Corps of Engineers, under the Trump administration, selected the Calabasas landfill from an eligible list."

By April, evidence began to appear that suggested the Calabasans' anxieties were justified. Because the state and federal government would not fund soil testing of the Palisades and Altadena, Los Angeles County's Department of

Public Health began its own program; preliminary results showed elevated levels of arsenic, among other hazardous compounds, in samples taken from plots in the Palisades.

James Bozajian, the Council member, emphasized that Calabasas' political influence had limits. "Usually what happens is people in economically depressed areas, who are powerless, are the ones who are stomped on," Bozajian said. "But now we're being stomped on. We had an unprecedented fire. That takes it outside the magnitude of something that a city like ours can have much of a say about."

The landfill imbroglio was the first test of a new kind of crisis, one that would inevitably be repeated in the hotter and drier decades to come. California, it was clear to Bozajian, had failed the test.

Despite having the most robust environmental laws in the nation, the state, at the very moment of greatest need, ignored them. "As you get more and more deadly natural disasters in California, particularly fires," Bozajian said, "I wonder if some of the old patterns" — the patterns of environmental protection, regulation and deference to aggrieved parties — "start to break down."

The sense of civic solidarity, in any case, began to erode in the weeks after the denial of the city's request for a restraining order. Greenberg Glusker, which had already run through the \$76,000 raised by the GoFundMe campaign, asked for a retainer of \$250,000. Michelle Geller said, offending many residents.

"Everybody kept saying, 'Why can't we get a pro bono?'" Geller said. "Well, Calabasas is pretty much the most expensive ZIP code in the state of California. And I'm a realist. It represents the top 1 percent of the country. We're not pulling on any law firm's heart strings." After a series of last-ditch efforts to raise more money, including a private appeal to the Kardashians, the residents dropped their suit.

More modest requests made through official channels were flatly rebuffed. When Dallas Lawrence, the president of the local board of education, asked the state's air-management agency to install air monitors at various locations in Calabasas, including a middle and high school, it refused. When the City of Calabasas offered to pay for an independent environmental firm to test the ash at the landfill, Los Angeles County declined and did not explain its rationale.

"Our one ask, from Day 1, has been: Test the ash," said Lawrence, a communications specialist who served in the George W. Bush administration. "If you would simply test every truckload that comes here, this community would feel great. It's not a tough ask. That's why it's so shocking. What are you afraid of?"

It was a rhetorical question. Everyone knew what the state was afraid of. Without testing, there could be no results. Without results, the ash would continue to be dumped in Calabasas and, sooner rather than later, Pacific Palisades would

rebuild — sooner, perhaps, than July 2028, when Los Angeles will host the Summer Olympics.

In June, after months of thwarted efforts, the City of Calabasas received a favorable ruling in its case against Los Angeles County: The Superior Court ruled that Calabasas had the right to test the fire debris deposited in the landfill. The court decision seemed to have an effect: For the next seven weeks, the county and Calabasas tried to negotiate a settlement.

No agreement was reached, however, and finally, on Aug. 11, experts hired by the city took 20 samples from four trucks arriving at the landfill. By then, 210,000 tons of fire debris had been deposited. The rest of the fire ash from the Eaton and Palisades fires has been dispersed across three other authorized facilities, with the bulk going to the Simi Valley Landfill.

The composition of wildfire ash varies from plot to plot, even square inch to square inch — the difference between a burned privet hedge and a burned car battery. In April, when The Los Angeles Times conducted its own testing of the Palisades and Altadena after federal and state agencies refused, it found plots with elevated levels of arsenic, lead and mercury. In May, Los Angeles County's Department of Public Health released final data that showed high levels of lead in about 12 percent of Palisades properties not yet cleared of debris. In July, The Times found that fire ash contaminated with asbestos was accidentally trucked to the nonhazardous landfills that were authorized to accept fire debris, and possibly to Calabasas.

No one seems to be certain about what will happen — legally, politically or environmentally — if any of the samples taken from Calabasas show toxicity. But consensus has been achieved on one point: The only thing worse than confirming the existence of hazardous waste in the landfill would be removing it. Digging up hundreds of thousands of tons of buried waste and loading it into trucks that carry it back down the hill through town would kick up fresh plumes of toxic dust, exposing the community all over again. Once toxic waste is properly buried, it should no longer pose a threat to the air above it — just to the land and groundwater below it.

The landfill's operators claim that the seven layers of composite lining beneath the landfill offer sufficient protection. But Calabasas' mayor, Peter Kraut, doesn't believe it. "We're basically taking an environmental problem from the Pacific Palisades and moving it to Calabasas. When are we going to see a problem from that? Could be 10 years down the road, but I do think it's going to be in our groundwater downstream."

Should toxic chemicals one day leak from the landfill, it could contaminate the soil, the local creeks or the ocean, into which they drain. The city's drinking water, which comes from the California Aqueduct, would not be affected. But something larger, and less

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ScienceNews

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Let It Burn

Collaborative approaches to managing wildfires can reduce the risk of deadly infernos



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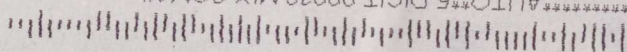
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After lightning strikes sparked wildfires in California's Six Rivers National Forest last summer (shown), firefighters allowed some flames to grow and ignited more to clear out vegetation that could fuel even more dangerous fires in the future.

Fighting fire with fire

A new approach combines local knowledge and AI to manage wildfires. Sometimes that means letting them burn **By Nikk Ogasa**

On June 4, 2021, amid flowering saguaros and prickly pear cacti, a wildfire bloomed in the Sonoran Desert in central Arizona. Its nascent flames spread on nonnative grasses desiccated by a long, severe drought. A nearby weather station recorded a temperature of 36° Celsius (97° Fahrenheit). It was so dry that the blades of firefighters' bulldozers — used

to clear brush — sparked small flames as the heavy vehicles dragged on rocks.

Fire ecologist Mary Lata of the U.S. Forest Service first heard about the fire over the radio while conducting fieldwork off to the north, in the Tonto National Forest. "I remember hearing them talking," she says, "and little by little realizing they weren't going to catch this one."

By June 7, winds had blown the wildfire east-northeast into the Pinal Mountains, in the Tonto's southern reaches. The flames ascended rapidly, overcoming rock cliffs — defying the expectations of veteran firefighters, Lata says — and sweeping through vast, unbroken stretches of chaparral. When the fire reached the highest elevations, crowned by pine forests, it swallowed those too.

The Telegraph Fire, as it's now called, grew so intense that it began to create its own wind, its rising heat generating a convective force that sucked in air from the sides, Lata says. "Of all the fires I've worked on, Telegraph was the nastiest."

On the fifth day, the fire neared the city of Globe. By then, it had already consumed an expanse that exceeded the area of Globe five times over. The blaze would go down as one of the largest conflagrations in Arizona history, engulfing some 700 square kilometers of land — equal to about half the area of Phoenix. But the fire would not swallow Globe.

Instead, on a ridge just outside the city, the Telegraph Fire encountered a bulwark, the vestiges of a bygone blaze.

Four years earlier, lightning had sparked the Pinal Fire in this location, albeit under milder conditions. Recognizing the need to clear out vegetation that might feed future blazes, fire crews allowed the blaze to consume litter, seedlings and other brush near to the ground. Crews even ignited flames of their own, expanding the fire's breadth.

Arriving at the Pinal's leftovers, the Telegraph Fire "went from a running canopy fire, where it was killing about 60 to 70 percent of the trees that it had encountered, to a creeping ground fire, where it was killing about 1 percent of the trees encountered," says Kit O'Connor, an ecologist at the Forest Service in Missoula, Mont. Eventually, the fire halted about a kilometer away from a neighborhood in Globe's outskirts.

Had it not been for the Pinal Fire, the Telegraph Fire would have burned into town, Lata says. "There's nothing we could have done to stop it."

The decision to let the Pinal Fire burn had been guided by a new blueprint for wildfire management, known as potential operational delineations. PODs section the landscape into zones within which fires can feasibly be contained. The boundaries are determined before the fire season starts by a mixture of artificial intelligence and local knowledge. A POD network can help land managers identify opportunities to harness wildfires that ignite under manageable conditions. The hope is that if subsequent fires erupt amid extreme conditions, there will be less brush available to fuel their fury.

"If you have a fire that's rushing towards homes, and there is no burned-out area or fuels cleared around those homes, they're basically guaranteed to be lost," says O'Connor, who has helped construct PODs throughout the West.

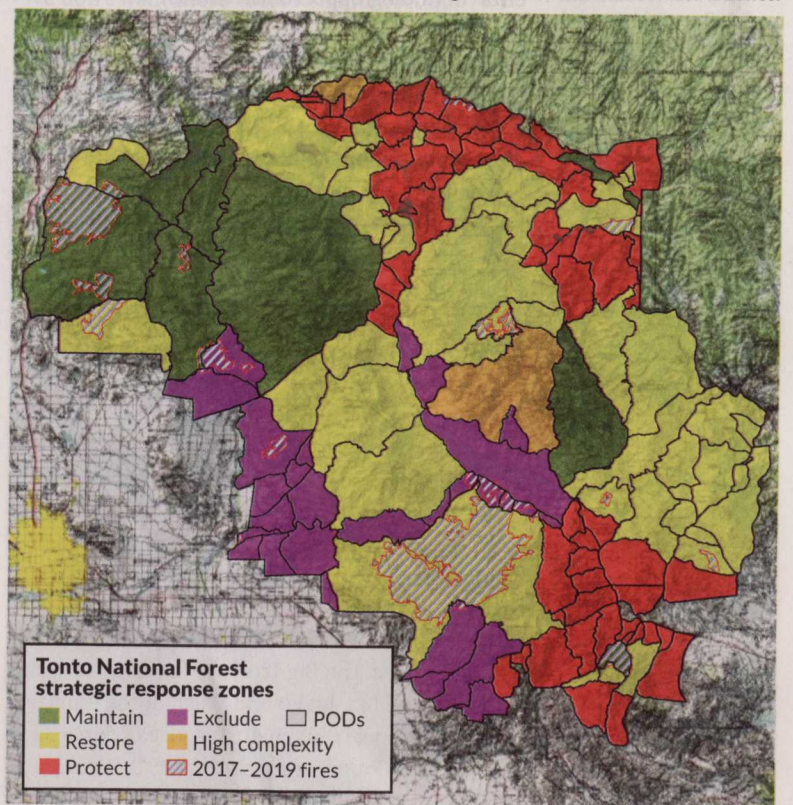
Today, POD networks sprawl across the West, from California to Washington and as far east as Minnesota. That coverage includes some 70 national forests, as well as state and private lands.

But as these wildfire blueprints spread, they face challenges. Keeping them updated to reflect the changing nature of the landscape is a crucial but difficult endeavor. And whether they will protect the interests of the Indigenous people who have managed the landscape for centuries remains to be seen.

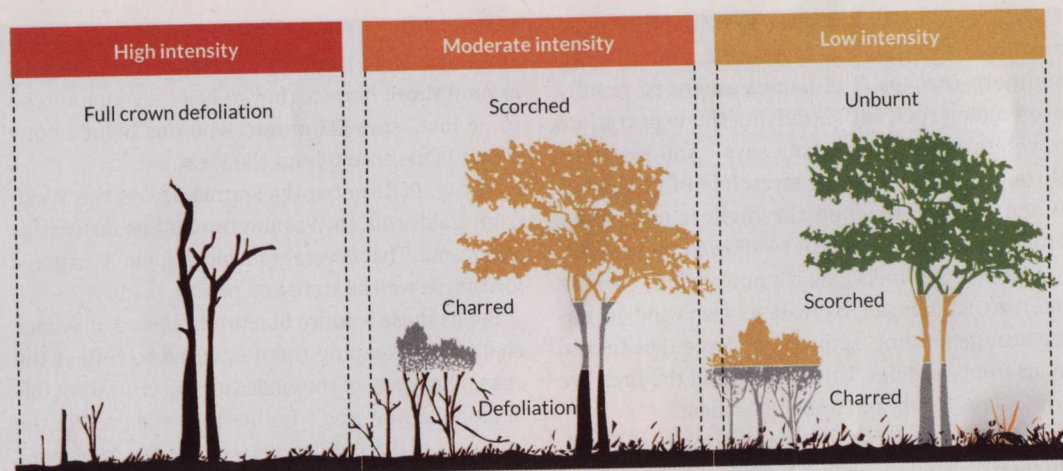
But the need for a new strategy is massive.

Climate change and decades of misguided fire management have steadily stoked wildfires in the West. Compared with four decades ago, the average area burned by western blazes each year has more than doubled. During the region's record-breaking 2020 wildfire season, thousands of fires burned an area larger than the state of Maryland. These

POD network The Tonto National Forest in Arizona is divided into PODs, zones in which wildfires can be contained. Color-coding helps plan responses: In green "maintain" zones, fires may be beneficial. In red "protect" zones, fires put people at high risk and should be suppressed. In purple "exclude" zones, fires should be put out to protect the Sonoran Desert ecosystem. In yellow "restore" zones, fires may be safe in certain conditions. If properly managed, "high complexity" orange zones could become restore zones.



Fire scale A variety of factors influence the intensity of a wildfire, including weather conditions and the vegetation present. A low-intensity fire stays close to the ground and mostly clears out low-lying vegetation and spares taller trees. A high-intensity fire, however, can climb into tree canopies and cause the complete loss of leaves and needles. But a lack of low-lying vegetation can slow these destructive blazes or even prevent them.



blazes are now burning more than twice as many homes and buildings as at the beginning of this century—from 2010 to 2020, fires destroyed more than three structures for each 10 square kilometers burned. And scientists predict that more land, and more homes, will burn in the future.

But working with manageable wildfires that emerge in ideal locations under favorable weather conditions to clear away dense vegetation could help reduce the risk that bigger blazes pose to homes and people across the western United States. “We can’t make fire go away,” O’Connor says. But “there’s potential for huge benefits” in finding opportunities to use it.

Collaborating to change

On December 4 of last year, there was no smoke discernible in the sky above Monterey, Calif. The worst months of the state’s fire season—July to November—had passed. But as seasons go, so do they return. So on this day in Monterey, a crowd of firefighters, conservationists and researchers had gathered in anticipation of the fires yet to come.

“We’re sort of stuck between two paradigms,” Christopher Dunn told the group. Projected behind him were two images. On the left, a painting from 1905 depicts a member of the Blackfeet Tribe crouched on a prairie, setting fire to the grass with a flaming torch. On the right, a staged photo from 1955 shows a fire brigade of jeeps and a helicopter heading toward a smoking fire in the distance. “We need both of these,” said Dunn, a forestry researcher at Oregon State University in Corvallis.

In 1910, just five years after the birth of the Forest Service, the Big Blowup—some 1,700 wildfires in Montana, Idaho and Washington—burned over 12,000 square kilometers in just a couple days. As a result, Congress passed the 1911 Weeks Act, which effectively outlawed traditional uses of fire by

Indigenous people. They had used fire for a trove of benefits, from corralling bison to clearing brushy areas for crops. In 1935, the Forest Service enacted the “10 a.m. policy,” in which every reported fire should be suppressed by the 10th hour of the next day.

Fast-forward to today, and about 98 percent of U.S. wildfires are suppressed before reaching 1.2 square kilometers. Suppressing most wildfires has allowed thick, continuous beds of vegetation to grow. Under extreme conditions, such fuel loads can nourish huge blazes like the Telegraph Fire. A landscape with frequent fire, on the other hand, tends to develop a patchwork of areas that burned at different points in the past, with vegetation at various stages of regrowth. Such pyrodiverse landscapes, with their rich mix of habitat types, can boost an area’s biodiversity, scientists suspect. What’s more, recently burned patches contain diminished fuel stocks, which can hinder the growth of wildfires even under extreme conditions, like the Pinal Fire scar did.

“We want more fire,” Dunn said. He was speaking to a crowd focused on developing PODs for lands in and adjacent to California’s Los Padres National Forest, along the state’s mountainous Central Coast between Monterey and Ventura.

First introduced in a 2016 paper based on work led by the Forest Service in California’s Sierra Nevada, PODs are, at their simplest, polygons drawn on a map. Their boundaries typically follow features from where fire can be safely and effectively contained, like ridgetops, roads or rivers. These boundaries can also inform where prescribed burning, selective logging or other actions could be taken to reduce vegetation and minimize fire risk.

POD networks resemble geometric cobwebs, typically strung together during the fire off-season in workshops attended by land managers, tribal members, fire crews, researchers and other

local stakeholders. The workshops allow for the proactive sharing of knowledge that might otherwise remain siloed, O’Connor says. “It really helps to involve all the different players in the long-term management of a piece of ground.”

For the second part of the workshop, Dunn and his colleagues spread large topographic maps across tables in two rooms, showing various sections of Los Padres National Forest and proximal lands.

Some of the maps were shaded in where wildfires had burned recently or where measures to reduce burnable vegetation had occurred. Other maps were colored over by a machine learning algorithm that draws from data on topography, fuel characteristics, road networks and historical fires to predict and map the most effective locations for stopping a blaze. This “potential control line” model doesn’t know the land as well as local land managers, but it can help them reach a consensus, O’Connor says.

There were also maps colored by another algorithm, called the suppression difficulty index model. It tells “you how difficult it would be to move people and equipment to any part of the landscape,” O’Connor says. In other words, where it’s hardest to fight a fire from.

Dunn tasked workshop participants with drawing PODs on these maps, using the shaded and colored areas as guides for where to sketch boundary lines. With sharpies in hand, attendants began drawing dark lines on the maps, sometimes following features accentuated by the models, other times diverging. Discussions filled the air.

“The only way to keep going this way is a really gnarly ridge.”

“We used this section on the Dolan Fire. It was good.”

“That road doesn’t go all the way through anymore.”

“It does.”

In some national forests, PODs are augmented with another tool, the Quantitative Wildfire Risk Assessment, or QWRA. These assessments chart where a fire may be most damaging, taking into consideration the locations of homes, endangered species habitats, timber resources and other assets.

When dressed with QWRAs, skeletal POD networks metamorphose into vibrant mosaics, mostly in the colors of a stoplight. When PODs are colored green, they signal areas that could benefit ecologically from fire and where a fire is unlikely to damage resources. Here, letting wildfires burn may be a go. Alternatively, a red POD contains a lot of resources at risk of being lost in a fire. Any emerging fires

should probably be stopped. Some PODs fall into an in-between yellow category: The POD could benefit from fire, but only under the right conditions.

With these ratings in hand, land managers can strategize how best to handle fire. The 2017 Pinal Fire emerged in a yellow POD, which firefighters let burn.

After the Monterey workshop, the hand-drawn lines were digitized and made publicly available for viewing on the Risk Management Assistance Dashboard, an online platform developed by the Forest Service in 2020 where users can follow up with comments and suggest alterations.

PODs can also be updated in follow-up workshops in subsequent years. But gathering people year after year is easier said than done. “For [PODs] to be useful, they have to be updated,” says forest and wildlife researcher Michelle Greiner of Colorado State University in Fort Collins. The landscape changes over time. But keeping PODs up-to-date, or even in the awareness of land managers and fire crews, “takes a lot of time and a lot of capacity,” she says, “and I think it kind of remains to be seen if that’s something that’s going to be sustained.”

One step the Forest Service has taken is to hire regional analysts responsible for keeping POD networks updated and relevant, O’Connor says. “We want to make sure that we’re expanding on and growing out of what’s already been done,” he says. “We don’t want these tools to be forgotten.”

Cultural conflicts

Drive about six hours north of Monterey, and you’ll find yourself in the Klamath Mountains, which straddle the California-Oregon border. Indigenous people,

The 2021 Telegraph Fire (shown) became one of the worst wildfires in Arizona history. But as it approached the city of Globe, the fire slowed where a previous wildfire had burned away litter, seedlings and other brush near the ground.



GRID-ARENDAL/STUDIO ATLANTIS/FICKR (CC BY-NC-SA 2.0 DEED)

MARK HENLE, POOL/AP PHOTO

Fire scale A variety of factors influence the intensity of a wildfire, including weather conditions and the vegetation present. A low-intensity fire stays close to the ground and mostly clears out low-lying vegetation. A high-intensity fire, however, can climb into tree canopies and cause a crown fire.

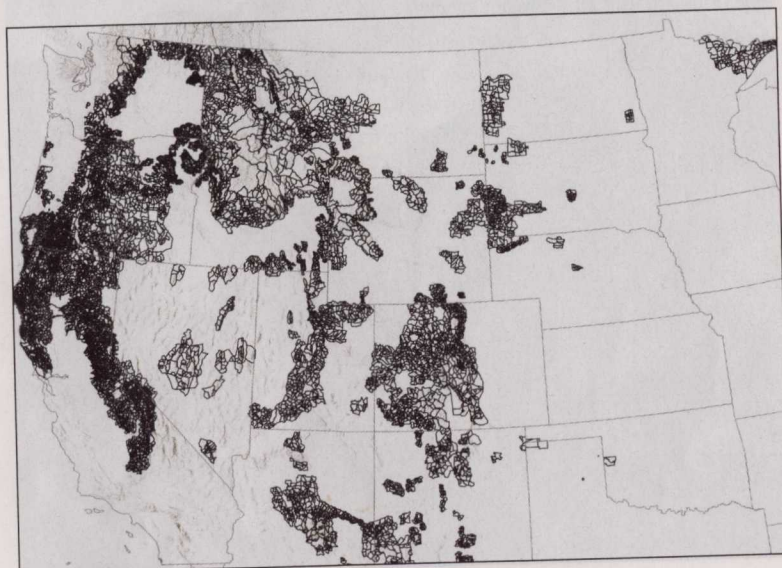
from the Karuk, Yurok, Hoopa Valley and other tribes have lived in this region for thousands of years.

Indigenous people's setting of frequent, low-intensity fires yielded many ecological benefits, such as promoting elk habitat and restoring nutrients to soils. In fact, Karuk and Yurok burning practices, along with naturally ignited fire activity, promoted the stability of a forest in the western Klamath Mountains for a millennium, a 2022 study showed. But suppressive fire policies over the last century have drastically changed the land.

"If you could look back 150 years ago, you would see a landscape that was shaped by fires," says Nolan Colegrove, a district ranger for the Forest Service and a member of the Hoopa Tribe. In the Klamath Mountains where Colegrove works, lofty Douglas fir trees crowd many patches of land once occupied by grasses or shrubs.

A unique POD network has taken root here. Its development has been led by the North Coast Resource Partnership, or NCRP, an organization helmed by elected officials from the region's tribes and counties. Across 49,000 square kilometers of northwestern California, the partnership works on projects that benefit local communities and watersheds. Usually, the Forest Service leads the development of PODs, Dunn says. Here, the tribes and counties took up the work. This ensures that everyone in the community is involved, says Will Harling, director of the Mid Klamath Watershed Council, a nonprofit that collaborates on the POD network. Harling notes that when the Forest Service develops a POD network, the agency doesn't always seek the support or buy-in of everyone in the community. "Everybody that has skin in the game needs to be around that table, or else it doesn't work," he says.

Spread like wildfire POD networks (outlined in black) extend across some 70 national forests and on state and private lands in the United States. Some recently drafted POD networks, such as the one for Los Padres National Forest, are not shown.



Invitees to NCRP's POD workshops included representatives from local tribes, county governments, the Forest Service, industrial timber, municipal fire departments, homeowners associations, and the California Department of Forestry and Fire Protection. Bringing everyone together was eye-opening, revealing how past efforts to reduce wildfire risk had failed, Harling says.

But the POD approach has sparked disputes. For instance, the data in PODs are publicly available, but much of the ecological and cultural knowledge that tribes possess may be too sensitive for public disclosure. In POD workshops, Indigenous people may help delineate POD boundaries on their historic lands while withholding where along those lines tribal resources exist. Later on, those lines may be treated by fire crews in unexpectedly destructive ways.

"A lot of our [culturally] sensitive areas are on ridges and mountaintops and in these places where [control] lines and other suppression tactics are often constructed," says Vikki Preston, a member of and cultural resources technician for the Karuk Tribe. When fire crews unaffiliated with tribes come in to clear brush and thin the forest, they can damage or destroy ceremonial trails, archaeological sites and other important tribal resources.

"I've seen dozers go through a mushroom patch that people have been picking for generations, and all of a sudden they don't grow there anymore," says Bill Tripp, a member of the Karuk Tribe and its director of natural resources and environmental policy.

The Karuk Tribe now tries to assign tribe representatives to accompany any fire crews on POD lines to ensure that culturally important resources are protected.

The strategy was implemented during last summer's Six Rivers National Forest Lightning Complex Fires. After a flurry of lightning strikes ignited dozens of fires across the Six Rivers National Forest and Redwood National and State Parks in August, a bout of rainfall that dampened the blazes provided land managers with safe conditions to let the fires burn on and to ignite some flames of their own.

Using PODs to identify suitable ridgelines, fire crews accompanied by cultural representatives set flames that crawled downhill to converge with the wildfires. Those strategic ignitions burned areas that the wildfires may have reached eventually, Colegrove says, but they probably burned in a gentler manner. The fire crews took advantage of a natural fire behavior; in the absence of winds, descending blazes generally move less vigorously than those going uphill. So most of the land affected by the set fires burned at low or moderate

intensity, Colegrove says. Compared with high-intensity fires, which can move fast and consume entire trees, low- and moderate-intensity fires spread slower and stick closer to the ground, clearing ground-level vegetation.

Such mild fires can be immensely beneficial. In conifer forests like the Six Rivers National Forest, low-intensity blazes reduce the risk of future high-intensity fires by about 64 percent, researchers reported last year in *Science Advances*, with the effects lasting at least six years.

Though the human-lit flames burned within 100 meters of Harling's home, he found the risk worthwhile. "After 20 years of community organizing with the Karuk Tribe and partners, the federal agencies finally gave us a chance to use beneficial fire on the landscape," he says.

Tribal consultations should be integrated into the process of treating lands within a POD, Tripp says. Simply opening the doors for those discussions will spotlight the need to build relationships, he says.

In its 2023 Tribal Action Plan, the Forest Service highlights the importance of assigning a tribal liaison to every wildfire response. Perhaps PODs could be used to illuminate where such liaisons could be most effective, Tripp says. If a POD is developed on land where there is no documented framework for collaborating with a local tribe, he says, that could provide the impetus for bringing on a liaison to build a relationship.

A new language for fire

Head to the very center of Arizona, and you will probably end up near Payson. The town is surrounded by the Tonto National Forest and by the world's largest contiguous stand of ponderosa pine. A few of those scaly-barked, droopy-needed trees are within view of Lata's office.

"We know that this area burned on average about every seven years," Lata says, referring to the time before widespread fire suppression began. So long as humans are around, that fire frequency is unlikely to return. "There aren't going to be a lot of places where we let the natural disturbance cycle play its role, because even though we now understand how important fire is... we don't have the freedom to put that much fire back in the system," she says. There's a limit to how much fire and smoke people will tolerate.

Nonetheless, PODs should help get more fire onto the landscape, and not just through the management of natural blazes. Managers of the Tonto forest use PODs to identify areas that would benefit from prescribed burning to clear away brush and



thus improve wildlife habitat, reduce wildfire risk or reap other ecological benefits.

"It's kind of a no-brainer to use the PODs as boundaries for those projects," Lata says.

Others agree. In 2019, the San Juan National Forest of Colorado began integrating PODs into their plans for prescribed burning. That same year, the San Isabel National Forest in Colorado used a POD network to help identify where to clear brush for firebreaks that could help contain future fires. And in 2020, the Washington State Department of Natural Resources also started using PODs to prioritize such treatments and to explain to private landowners why treatments were necessary, and why certain areas were being prioritized for treatment over others.

It helps to have a tool that can show landowners why their neighbors' property should be treated first, says forest sciences researcher Cole Buettner of Colorado State University. In a 2023 study, he evaluated how PODs have been used in these "non-incident contexts," as they're called. "It can help get a lot of support for what you're doing."

Perhaps in this regard, PODs serve their most vital function. In translating visions for fire into lines and colors on a map, PODs become a communal language through which a new relationship with wildfire may be forged.

These polygons simplify the conversation, Lata says. "We can just say POD, and we all know what that means."

Explore more

■ Xiao Wu et al. "Low-intensity fires mitigate the risk of high-intensity wildfires in California's forests." *Science Advances*. November 10, 2023.

During the Six Rivers National Forest Lightning Complex Fires in 2023, fire crews lit flames to mitigate damage by naturally ignited wildfires. Here, firefighters burn brush with a drip torch to forestall a blaze that threatened a home.

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How will
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their
sexual
development?

By
Daniel
Bergner